



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,169	04/17/2006	Takeaki Saiki	71051-008	9218
27305 7590 10/30/2008 HOWARD & HOWARD ATTORNEYS, P.C. THE PINEHURST OFFICE CENTER, SUITE #101 39400 WOODWARD AVENUE BLOOMFIELD HILLS, MI 48304-5151			EXAMINER DOLLINGER, MICHAEL M	
			ART UNIT	PAPER NUMBER
			1796	
			MAIL DATE	DELIVERY MODE
			10/30/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/533,169

Applicant(s)

SAIKI ET AL.

Examiner

MICHAEL DOLLINGER

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SF 298)
Paper No(s)/Mail Date ____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION***Claim Objections***

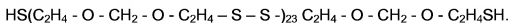
1. The claims objections in the Office Action sent on 28 April 2008 have been obviated by the amendments to claims 4 and 9.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Millen (US 3,476,826).
4. Applicants claim a method of preparing a polysulfide-type polymer having an organosilyl group characterized by mixing (A) an organosilane containing at least one branch with aliphatic unsaturated bonds, (B) a polysulfide polymer having molecular terminal capped with mercapto groups, (C) a nitrogen-containing base, and (D) sulfur.
5. Example 1 of Millen discloses a method of preparing vinyl triethoxy silane polysulfide by mixing (A) vinyl triethoxy silane (column 5 lines 31-32) and (B) a polysulfide polymer (column 5 lines 24-30) having essentially the structure



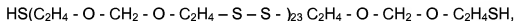
Art Unit: 1796

This vinyl triethoxy silane polysulfide is usable as an adhesive additive or primer composition for a high rank sulfur polysulfide polymer based adhesive composition (column 1 lines 57-62).

6. Regarding claims 7 and 10, applicants claim carrying out the mixing of components (A) to (D) at a temperature with a range from room temperature to 200°C. Example 1 of Millen is carried out at 110°C (column 5 line 33).

7. Example 1 in Millen does not disclose a mixture including (C) a nitrogen containing base and (D) sulfur.

8. Example 2 in Millen discloses a method of preparing a high sulfur rank polysulfide polymer by mixing paraformaldehyde with (B) a polysulfide polymer (column 5 lines 24-30) having essentially the structure



(C) triethylamine and n-dibutylamine, and (D) sulfur. The process is carried out at 23-53°C (column 5 lines 58-59) and the triethylamine is used to block the mercapto groups in order to allow the sulfination of the polymer to take place (column 5 lines 52-53). High sulfur rank polysulfide polymers are well known in the art as effective sealants and adhesives (column 4 lines 39-48). In the subsequent Examples 3 – 10, Millen combines the high sulfur rank polysulfide polymer of Example 2 with the vinyl triethoxy silane polysulfide of Example 1 to make a sealant applied to substrates of glass and aluminum.

9. Regarding claims 5 and 10, applicants claim carrying out the mixing of components (A) to (D) in an atmosphere of inert gas. The reaction in Example 2 of Millen is carried out under an atmosphere of nitrogen (column 5 line 57-58).

Art Unit: 1796

10. Regarding claims 7 and 10, applicants claim carrying out the mixing of components (A) to (D) at a temperature with a range from room temperature to 200°C. Example 2 of Millen is carried out at 23-53°C (column 5 line 58-59).

11. It would have been obvious to one of ordinary skill in the art to have combined the elements (A), (B), (C), and (D) of the mixtures in Examples 1 and 2 of Millen into one mixing process because Example 1 teaches it is within the skill of the art to mix (A) an organosilane having an aliphatic unsaturated bond on one substituent with (B) a polysulfide polymer at a maximum temperature of 110°C in order to obtain a organosilane terminated polysulfide polymer useful as an adhesive additive and Example 2 teaches it is within the skill of the art to mix (B) a polysulfide polymer, (C) a nitrogen-containing organic base, and (D) sulfur at a temperature between 23-53°C in order to obtain a high sulfur rank polysulfide polymer useful as a sealant. One would have combined the elements (A), (B), (C), and (D) into a single reaction mixture 1) carried out the sulfination reaction at a temperature of 23-53°C for 3 hours and 2) carried out the silanation reaction by heating to a maximum temperature of 110°C in order to obtain the expected result of a single polymer composition that is both high sulfur rank and organosilane terminated so that the polymer is effective as a sealant on glass and metal substrates. A sealant of a single polymer would have expected benefits over a polymer mixture, including improved adhesion to a substrate due to higher proportion of organosilane terminals that act as coupling agents and improved cohesion within the sealant. Absent any evidence to the contrary, there would have been reasonable expectation of success of an improved

Art Unit: 1796

sealant composition through the combination of the mixtures taught in Examples 1 and 2 in Millen.

Response to Arguments

12. Applicant's arguments filed 28 July 2008 have been fully considered but they are not persuasive. Applicant argues that the claims are allowable because 1) Millen describes a two-step reaction process whereas Applicant's invention claims a one-step reaction process and that there is no reason to combine the steps disclosed in Millen into a one-step process, 2) combining the reaction steps of Millen would render the sealant inoperable because the -SH terminals of the polysulfide would be capped with organosilanes and unable to cure and 3) a one step-process shows unpredictable results.

13. The foregoing arguments are not found persuasive for the following reasons:

1) Firstly, the claim language does not require a one-step reaction process, but merely the a final mixture of all the elements A, B, C and D. Secondly, case law holds that the selection of any order of mixing ingredients is *prima facie* obvious. *In re Gibson*, 39 F.2d 975, 5 USPQ 230 (CCPA 1930). Case law also holds that a continuous process is obvious in light of a batch process of the prior art. *In re Dilnot*, 319 F.2d 188, 138 USPQ 248 (CCPA 1963). So a one-step process would have been obvious over the disclosure of a two-step process. Thirdly, Examiner has presented motivation for combining the process steps in the

previous office action: a sealant of a single polymer composition rather than a polymer mixture would have better adhesion to a substrate due to better cohesion (miscibility) of polysulfides with silane coupling agents and polysulfides with mercapto end groups. Applicant has not responded to this argument.

2) Applicant's argument is only valid if all or nearly all of the mercapto terminal groups are capped with organosilanes. In Example 2 Millen includes triethylamine to block the -SH groups [column 5 lines 51-54]. When combining Examples 1 and 2, the triethylamine blocking agent would block a portion of the mercapto groups and keep them from reacting with the organosilanes. Just combining the reactants of Example 1 and Example 2 in the amount they are used in the ratio of the polysulfides in Examples 3-9 would theoretically result in the same amount of silane-capped polysulfide in Examples 3-9.

3) Applicant claims unexpected results of a one-step reaction but does not name any specific unexpected properties resulting from a one-step reaction. Applicant claims that the one-step reaction itself is unexpected, in the response to argument 1) above, Examiner has already addressed the patentability and claim language pertaining to the order of reaction steps.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MICHAEL DOLLINGER whose telephone number is (571)270-5464. The examiner can normally be reached on Monday - Thursday 7:30AM-6:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Randy Gulakowski/
Supervisory Patent Examiner, Art Unit 1796

MICHAEL DOLLINGER
Examiner
Art Unit 1796

/mmd/